Bellwork: 1/10/13 - Period 1 $a+bi$

Perform the indicated operation:

subtract

1) (3-9i)-(4+7i)

$3-4$ $-9i-7i$ $\quad 3-9i-4-7i$

$-1-16i$

multiply = foil

2) (2+i)(3-5i)

$6-10i+3i-5i^2$

$-5(-1)$

$6-10i+3i+5$

$11-7i$

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20) $(7+9i)+(-5i)$

7

$9i+-5i$

$7+4i$

22) $(-6-7i)-(1+3i)$

$-6-1$

$-7i-3i$

$-7-10i$

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(24) $(-6-5i)(1+3i)$

$-6-18i-5i-15i^2$

$-15(-1)$

$-6-18i-5i+15$

$9-23i$

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Algebra 2B - Imaginary & Complex Numbers

☺ In order to simplify a fraction containing complex numbers, you need to use the *conjugate of a complex number.*

$9-2i \rightarrow 9+2i$ **Conjugate of a Complex Number** → only useful w/ Division.

The **conjugate of a complex number $a+bi$ is $a-bi$ ($4+7i$ → $4-7i$)

Example 3: Simplify $\frac{2+5i}{2-3i}$. Write your answers in standard form.

$\frac{2+5i}{2-3i} \cdot \frac{2+3i}{2+3i} = \frac{11+16i}{13}$

Top:
$(2+5i)(2+3i)$
$4+6i+10i+15i^2$
$15(-1)$
$4+6i+10i-15$
$-11+16i$

Bottom:
$(2-3i)(2+3i)$
$4+6i-6i-9i^2$
$-9(-1)$
$4+9$
13

YOU TRY: Simplify $\frac{3-4i}{2+i}$. Write your answers in standard form.

$\frac{3-4i}{2+i} \cdot \frac{2-i}{2-i} = \frac{2-11i}{5}$

Top:
$(3-4i)(2-i)$
$6-3i-8i+4i^2$
$6-11i-4$
$2-11i$

Bottom:
$(2+i)(2-i)$
$4-2i+2i-i^2$
$4--1$
5

YOU TRY: Simplify $\frac{3-2i}{-4+i}$. Write your answers in standard form.

$\frac{3-2i}{-4+i} \cdot \frac{(-4-i)}{(-4-i)} = \frac{-14+5i}{17}$

Top:
$(3-2i)(-4-i)$
$-12-3i+8i+2i^2$
$-12-3i+8i-2$
$-14+5i$

Bottom:
$(-4+i)(-4-i)$
$16+4i-4i-i^2$
$16--1$
17

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Homework: Period 3: pg 253 #18-~~20~~ 26 even

Period 1: pg 253 #27-30 all